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## Editorial

### The future of pharmacognosy in academic education

Plants are one of the most important and oldest resources of preparations used in medicine, and pharmacognosy is an integral part of academic education of pharmacists. While this special field originally consisted of the identification of medicinal plants and of the knowledge about their constituents, pharmacological effects and therapeutic efficacy, during the past 20 years a new development with a clear focus on molecular biology has been observed. This trend was linked to research on biosynthesis and elucidation of molecular mechanisms of action of biologically active natural substances thus leading to the identification of new targets in order to develop new active substances for modern medicinal products.

It has been discussed on several occasions how pharmacognosy should define its position in academic research and education, and debates on this subject are ongoing in many European countries. There is of course a need for modernization because all "classical" areas must be prepared for the future and be in line with scientific and technological progress. However, the original knowledge about identification of plants and their typical constituents as well as their effects and efficacy which represent an integral part and a unique feature of the pharmacists' education must not be neglected. Such a knowledge forms the basis for a scientific phytotherapy and the use of herbal medicinal products which have been fully recognized as medicinal products by the European legislation. E.g., in accordance with the European Directive 2004/24/EC the Herbal Medicinal Products Committee (HMPC) was founded in 2004, and a registration procedure for traditional herbal medicinal products was established.

There seems to be consensus about the importance of pharmacognosy for the basic skills of future pharmacists, for the knowledge of medicinal plants and the expertise in using herbal medicinal

products. Plant research as well as molecular biology should therefore represent equal core areas of a modern pharmacognosy.

ESCOPE is of the opinion that the core competence of academic education must refer to biogenic substances in their entirety. Therefore the medicinal plant besides microorganisms and products of animal origin represents an important target of research on potential active substances. Thus primary and secondary substances as well as complex mixtures (extracts), and also substances of biotechnological origin and living cells belong to the nature of pharmacognosy.

Academic education which only focusses on elucidation of biochemical pathways with a selected engineering to produce new active substances would result in the ability of future pharmacists to describe exact biochemical procedures and to synthesize new drugs, however, they would no longer be able to identify medicinal plants with their constituents and their pharmacological effects and therapeutic efficacy. Without such a knowledge of pharmacognosy the understanding of a more complex context with regard to research and development of new active substances and modern medicinal products will no longer be possible.

ESCOPE would highly appreciate a modern pharmacognosy defining its position and finding its place besides all other areas of academic education of pharmacists such as pharmacology, pharmaceutical chemistry and technology as well as clinical pharmacy, but bearing in mind the maintenance of the unique knowledge about medicinal plants, their effects and their therapeutic efficacy as an integral part of the pharmacists' competence and experience.

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